

To: Federal-State Marketing Improvement Program (FSMIP)
Agricultural Marketing Service
United States Department of Agriculture

Title: **Final Report for Agreement #12-25-G-0381:
Hybrid Grapefruit Consumer Acceptance Project**



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Abstract

The Florida Department of Agriculture requested and received FSMIP funds in 2003 to identify new market opportunities and explore potential domestic markets for this grapefruit hybrid, the Early Sweet. A survey instrument was developed to record demographic data and measure citrus fruit preferences. Interview venues in Florida, Virginia and Michigan were selected to maximize controlled data collection while obtaining a good cross section of respondents. Participants from public elementary, middle and high schools, a university, a senior citizen center, and adults of various ages were polled. In controlled environments, participants performed “taste tests” and completed the survey instrument comparing the Early Sweet with a Ruby Red and a Marsh grapefruit variety. The majority of the participants (76%) chose the Early Sweet as the preferred sample, citing flavor and juiciness as the impetus.



Project Description

To create awareness in Florida’s citrus producers of the market potential of the new citrus variety and to contribute support to the economic sector. This will be accomplished through consumer preference research, and a report of economic potential.

Goals and Objectives

To identify and assess domestic market potential.

Florida is the United States' leading producer of grapefruit with almost 80 percent of the domestic production in 2001/02. The U.S. is the dominant grapefruit producer with almost 63 percent of the global production. Florida citrus producers are suffering through an extended period of declining "real prices" and profits for all varieties of grapefruit. Grapefruit acreage has dropped continuously for the last eight years. The 2002 production commitment (105,488 acres) is down almost 40 percent from the 1994 level. To compound the problem, the grapefruit groves are declining in value while other Florida agricultural land increases in value. The chronic loss of market and the declining asset value threaten the economic stability of the grapefruit production regions.

The USDA's Citrus Breeding Program in Fort Pierce, Florida, has developed a new grapefruit hybrid designed to counter the downward economic spiral. Initial consumer preference testing indicates positive market potential for the new variety. Further acceptance testing will determine the prospective level of market penetration and latent sale possibility.

To identify market segments with the most potential interest in Early Sweet Grapefruit.

The cities of Fort Myers, Florida; Richmond, Virginia; and Kalamazoo, Michigan were chosen based on the following factors:

- Geographic diversity, which accounts for any regional variations in taste preferences.



- The personal income distribution of the city's citizens is another consideration. The new grapefruit variety, Early Sweet, will likely be more expensive than varieties currently on the market, so median and main income of the city in combination with local cost of living must indicate an ability to purchase a premium product.

US Census Bureau QuickFacts	Florida	Virginia	Michigan
Population, 2001	16,396,515	7,187,734	9,990,817
Median household income	\$38,819	\$46,677	\$44,667
Per capita income	\$21,557	\$23,975	\$22,168
Retail sales per capita	\$10,297	\$9,293	\$9,576

- The population's age distribution was the final factor determined to be a potentially important demographic. Previous research has indicated that age is an important element of fresh fruit consumption.

US Census Bureau QuickFacts	Florida	Virginia	Michigan
Population, 2001	16,396,515	7,187,734	9,990,817
Persons under 5 years old	5.9%	6.5%	6.8%
Persons under 18 years old	22.8%	24.6%	26.1%
Persons 65 year old and over	17.6%	11.2%	12.3%

Persons in the 25 and under age range are still in the process of establishing consumer preferences, so product marketing and education are essential. Making fresh fruit consumption part of a lifestyle habit at an early age is most likely to create a regular fresh fruit customer for years to come.

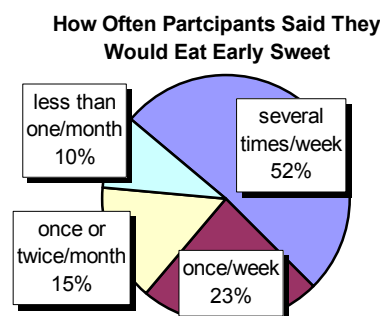
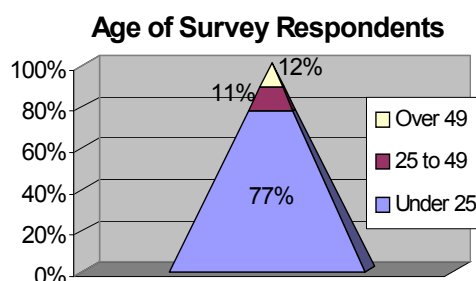
For those persons that fall into the other age ranges above 25, consumer preferences are influenced by an increased focus on personal fitness and better nutrition and produce is an important factor in a healthy lifestyle. Most of these consumers have indicated that they have started or increased their consumption of fresh fruit as a diet or health requirement.

To identify the strongest marketing point of Early Sweet Grapefruit.

The Florida Department of Agriculture requested and received FSMIP funds in 2003 to identify new market opportunities and explore potential domestic markets for this grapefruit hybrid, the Early Sweet. A survey instrument was developed to record demographic data and measure citrus fruit preferences. Interview venues in Florida, Virginia and Michigan were selected to maximize controlled data collection while obtaining a good cross section of respondents. Participants from public elementary, middle and high schools, a university, a senior citizen center, and adults of various ages were polled. In controlled environments, participants performed "taste tests" and completed the survey instrument comparing the Early Sweet with a Ruby Red and a Marsh grapefruit variety.

The majority of the participants (76%) chose the Early Sweet as the preferred sample, citing flavor and juiciness as the impetus. Eighty-four percent of the respondents said they preferred the sweeter citrus varieties of oranges/temples (49%) and tangerines/tangelos (36%), while only 8% preferred grapefruit. While the percentage of respondents preferring oranges/temples was consistent with national figures, the 8% who preferred grapefruit was low compared to the 21% national average.

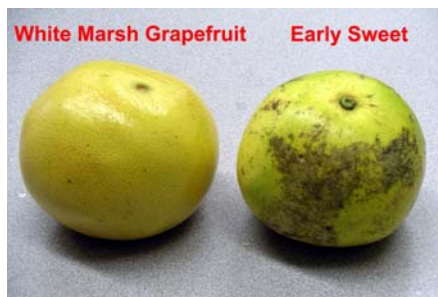
The Early Sweet rated higher than the Marsh and Ruby Red varieties in all three categories: overall; as compared to other grapefruit; and as compared to their favorite citrus fruit. Eighty-three percent of the total respondents gave the Early Sweet a 4 or 5 overall rating. That same percentage also gave the new fruit a 4 or 5 when comparing it to other grapefruit. Sixty-nine percent also rated the Early Sweet a 4 or 5 against their favorite citrus fruit. Three out of 4 said they would like to eat the Early Sweet once to several times a week if it was made available to them.



The U.S. consumer has a variety of concerns that affect their fresh produce purchases. The primary factor and strongest marketing point is the anticipated taste of the product. When introducing a new variety of fruit like Early Sweet, including provisions to provide consumer sampling is crucial. Survey participants of all ages reacted positively to the taste of Early Sweet. Its taste was described as more orange than grapefruit with the grapefruit's tangy finish. A surprising number were able to discern the presence of tangerine with the grapefruit. While respondents often left portions of the white marsh and ruby red grapefruits, they seldom left any of their Early sweet portions. Many asked where they could purchase the fruit and when it would be available in their area. Most asked for and were given samples to take home after the survey session was complete.



Equally important are the general appearance and the perception of cleanliness. Participants commented on the mottled outer appearance of the fruit and what a pleasant surprise the look and taste of the fruit itself was as a result. Marketing Early Sweet must address these points in a positive manner while stressing the refreshing, sweet taste. Ripeness and nutritional value are also factors in the purchase decision. Education in those areas is similar to grapefruit and easy to address.

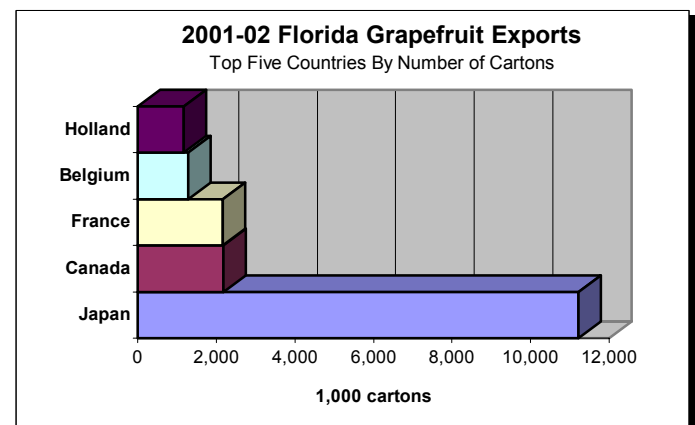
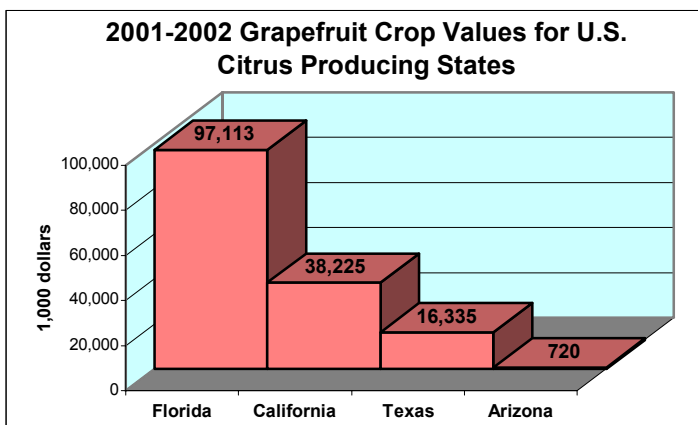


Primary factors impacting fresh produce purchases	
- 87% Expectations of taste	- 41% Item in season
- 83% General appearance	- 39% Knowledge of how to prepare
- 74% Cleanliness	- 33% Appearance of display
- 70% Degree of ripeness	- 27% Complements main entrée
- 57% Nutritional value	- 14% Where it is grown
- 47% Price	- 12% Organically grown

Source: "The Fresh Trends, 2001 Profile of the Fresh Produce Consumer"

To identify the most popular consumption venues for the Early Sweet Grapefruit.

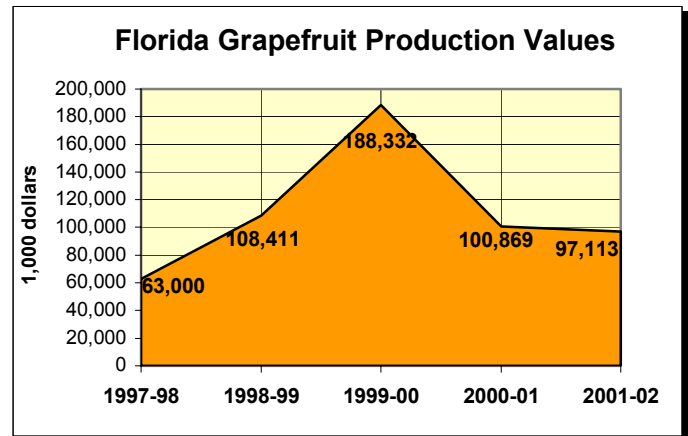
The most popular consumption venues can be identified as any state in the U.S. with an obvious concentration on the non-citrus producing states. Outside the U.S., Japan, Canada, France, Belgium and Holland were the top 5 importers of Florida Grapefruit and would be prime international consumption venues for Early Sweet.



To evaluate potential impact on Florida producers.

Since the production of citrus has not experienced recent growth, the USDA citrus breeding program decided to develop an early ripening, sweeter grapefruit hybrid in Florida. The current state of the grapefruit market is attributed to poor quality, early season fruit and bitter taste.

“Early Sweet” tastes like an orange, is nearly seedless and is medium in size. The smooth yellow peel and firm cream-yellow flesh pulls away easier from the rind than standard grapefruit. The flavor is sweet, mild, and low acid with a non-bitter albedo.



Initial research proves that a niche, younger aged market does exist for the early ripening, low acid, non-bitter “Early Sweet.” From the data collected there is evidence that “Early Sweet” has the potential to help Florida grapefruit growers create a new market of grapefruit customers for people who don’t like the taste of traditional grapefruit.

According to this initial domestic research, there is great potential for the success of this hybrid grapefruit variety. Capital investment and entrepreneurial risk associated with establishing grapefruit groves and marketing a new grapefruit variety can be minimized by further domestic and international consumer acceptance research of the Early Sweet variety. Continuing research efforts by exploring international markets will provide valuable data and develop a consumer interest base outside the United States.

The Early Sweet fruit ripens in September, earlier than traditional grapefruit that ripens in October. This would extend a grower’s season by at least a month, as well as create a new product line. According to the positive response to Early Sweet, Florida citrus growers that invest in, produce, and market this new crop can anticipate an improvement in sales. As a result, the U.S. grapefruit market in general would reflect sales growth.

Plan of Work

- Identify and examine three domestic consumer markets: Richmond, VA; Kalamazoo, MI; and Fort Myers, FL.
- Contract with a market research firm to develop an interview instrument to be used to gauge product needs.
- Schedule appointments within the market areas selected and send market research teams to interview the key demographic groups stratified by age and ethnic background.
- Compile the market research from the interviews in the selected market areas and publish the findings.

The Survey

The first three bullets under Plan of Work (above) were accomplished through a series of survey and taste test events. The survey is found on pages 8–12 of this document. Narrative of events is as follows.

The purpose of the survey was to determine the response of adults, elementary school students and high schools students to a new hybrid citrus fruit; working name “Early Sweet.”

Participants were assembled in a neutral setting, provided a briefing on the course of events, and an explanation of the survey instrument. The neutral setting allowed samples to be stored out of sight and removed after each module of the instrument was completed. Samples were not identified until after survey instruments were completed and submitted.

Several tasting sessions were conducted in Tallahassee, Florida; Ft. Myers, Florida; Richmond, Virginia; and Kalamazoo, Michigan. Respondents included adults who purchased most of the household groceries, students in the fourth and fifth grades, and students who were juniors and seniors in high school.



Respondents were given tastes of each fruit in a prescribed order. All respondents tasted fruit in the same order:

- a. White Marsh Grapefruit
- b. Ruby Red Grapefruit
- c. Early Sweet Grapefruit

Between each sample of the fruit respondents were given bottled water and plain, salt free crackers to cleanse their pallets.

At the conclusion of the Survey (approximately 30 minutes), each participant handed in a completed tabulation sheet. The survey instruments were secured prior to thanking the group and adjourning the meeting.

This consumer preference testing indicates positive market potential for the new variety. The profile of current grapefruit consumption leaves much of the market potential untapped. Interview respondents saying they consume grapefruit once monthly to never was 87%. Only 12% said they were eating grapefruit once a week or more frequently.

Survey indicators gave Early Sweet a much higher purchase and consumption potential. The research suggests that consumers would eat Early Sweet Grapefruit once a week or more often, most likely for a snack or breakfast. A profile of the typical prospective Early Sweet consumer would be under 25 years of age, someone who prefers a sweet citrus variety, but eats it only once or twice a month, or less.

Test subjects preference for grapefruit gave Early Sweet a decisively favorable rating. The Early Sweet variety was first with a 76% preference rating. The next closest was Marsh grapefruit with a 10% preference rating from the respondents.

When compared with other contemporary citrus fruit in the market place, 65% of respondents rated Early Sweet Grapefruit as better than their favorite citrus fruit. The flavor was rated by 70% of the respondents as the favorite feature of the Early Sweet Grapefruit.

The test respondents had well defined preferences for when they wanted to eat Early Sweet Grapefruit. A snack was the first preference with 74% of the respondents and 51% indicated breakfast. On this question respondents were encouraged to list more than one consumption venue if applicable.

Publish Market Research Findings

The fourth bullet under Plan of Work (above) was satisfied in the following manner:

A web site was created and made available to the Florida citrus industry, where the research contained in this report was published. Web address: <www.florida-agriculture.com/earllysweet>

For More Information

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Early Sweet Taste Test and Survey

Introduction

Good morning. We are here representing the Florida Department of Agriculture and Consumer Services, Division of Marketing and Development. The purpose of our visit is to get your opinion about grapefruit and to determine your consumption of that fruit. Your opinions and ideas are very important to the people who produce and market this product.

Instructions and Methodology

Each of you are being handed a survey form and I am requesting that you complete the introduction section that tells us a little bit about you. The introduction section is on the front page only. It makes no difference if you use a pen or pencil to complete this survey. When you have completed it, please put down your pen or pencil. You do not need to sign your name. However, if you would like further information about the results of this study, please provide contact information on the survey. Please complete the introduction section now.

(Pause for completion)

Please turn to the second page of the survey. Each of you is getting the first of three samples of grapefruit. Please eat the sample, then rate it for the qualities listed on the second page of the evaluation. We ask that you do not discuss your opinion of the sample during the sampling session. We want your unbiased opinion and do not want you to be influenced by your classmates and friends. When you have completed the second page please put down your pen or pencil.

(Pause for completion)

Please turn to the third page of the survey and take a drink of water. The water will neutralize the taste from the last sample. Eat the second sample, then rate it for the qualities listed on the third page of the evaluation.

(Pause for completion)

Please turn to the fourth page of the survey and take a drink of water. Eat the third sample, then rate it for the qualities listed on the fourth page of the evaluation.

(Pause for completion)

Conclusion

Please pass forward your survey form. Thank you for working with us by completing this questionnaire. The information gathered here and at other venues will be used to improve marketing of Florida grapefruit domestically. Add miscellaneous remarks as needed.

Florida Grapefruit Survey

Please check only one answer unless otherwise stated

Age: ☐ 10-13 ☐ 14-19 ☐ 20-25 ☐ 26-40 ☐ 41-55 ☐ 56+

Are You: ☐ Male ☐ Female

What is your classification? Grade

How often do you eat grapefruit: ☐ several times a week ☐ once a week
☐ once or twice a month ☐ less than one a month ☐ never

Do you eat it for (circle any that are appropriate): ☐ Breakfast
☐ Lunch ☐ Dinner or Supper ☐ Snack ☐ Dessert

What is your favorite citrus fruit (one only): ☐ Orange ☐ Grapefruit
☐ Tangerine ☐ Kumquat ☐ Tangelo ☐ Lime
☐ Other (please identify) _____

How often do you eat your favorite citrus fruit: ☐ several times a week ☐ once a week
☐ once or twice a month ☐ less than one a month

Do you eat your favorite citrus fruit for: ☐ Breakfast ☐ Lunch
☐ Dinner or Supper ☐ Snack ☐ Dessert

What do you like best about your favorite citrus fruit: ☐ Flavor ☐ Aroma
☐ Easy to prepare ☐ Health benefits ☐ Easy to take with you ☐ Easy to find
☐ Parents approve ☐ Other (please describe) _____

Please put down your pencil or pen

Florida Grapefruit Survey

Sample A

Please answer the following questions for Sample A only

1. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample overall (circle answer): (worst) 1 2 3 4 5 (best)

2. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample as compared to other grapefruit that you have eaten (circle answer):
(worst) 1 2 3 4 5 (best)

3. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample when compared to your favorite citrus fruit (circle answer):
(worst) 1 2 3 4 5 (best)

4. The feature I like best about Sample A is: ___ The flavor ___ The color
___ The acidity ___ Health benefits ___ The juiciness ___ The aroma
___ Other (please describe)

5. Would you eat this grapefruit for (circle any that are appropriate): ___ Breakfast
___ Lunch ___ Dinner or Supper ___ Snack ___ Dessert

6. How often would you like to have this sample to eat: ___ several times a week
___ once a week ___ once or twice a month ___ less than one a month

Please put down your pen or pencil

Florida Grapefruit Survey

Sample B

Please answer the following questions for Sample B only

1. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample overall (circle answer): (worst) 1 2 3 4 5 (best)

2. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample as compared to other grapefruit that you have eaten (circle answer):
(worst) 1 2 3 4 5 (best)

3. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample when compared to your favorite citrus fruit (circle answer):
(worst) 1 2 3 4 5 (best)

4. The feature I like best about Sample B is: ___ The flavor ___ The color
___ The acidity ___ Health benefits ___ The juiciness ___ The aroma
___ Other (please describe)

5. Would you eat this grapefruit for (circle any that are appropriate): ___ Breakfast
___ Lunch ___ Dinner or Supper ___ Snack ___ Dessert

6. How often would you like to have this sample to eat: ___ several times a week
___ once a week ___ once or twice a month ___ less than one a month

Please put down your pen or pencil

Florida Grapefruit Survey

Sample C

Please answer the following questions for Sample C only

1. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample overall (circle answer): (worst) 1 2 3 4 5 (best)

2. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample as compared to other grapefruit that you have eaten (circle answer):
(worst) 1 2 3 4 5 (best)

3. On a scale of 1 to 5, 1 being the worst and 5 the best, how would you rate this sample when compared to your favorite citrus fruit (circle answer):
(worst) 1 2 3 4 5 (best)

4. The feature I like best about Sample C is: ___ The flavor ___ The color
___ The acidity ___ Health benefits ___ The juiciness ___ The aroma
___ Other (please describe)

5. Would you eat this grapefruit for (circle any that are appropriate): ___ Breakfast
___ Lunch ___ Dinner or Supper ___ Snack ___ Dessert

6. How often would you like to have this sample to eat: ___ several times a week
___ once a week ___ once or twice a month ___ less than one a month

Please put down your pen or pencil